

REMARKS

The Office Action in the present case was mailed on January 21, 2009, making a response due on or before April 21, 2009. Since this response is being timely submitted, no additional fee is thought to be due for an extension of time. If any additional fee is due for the continued prosecution of the case, please charge the same to Applicant's Deposit Account No. 50-2555 (Whitaker, Chalk, Swindle & Sawyer, LLP).

The Examiner raised certain issues under 35 U.S.C. §112 regarding the "definiteness" of the original claim language in the case. In this response, Applicant's have made amendments to the original claim language in order to address these points raised by the Examiner. These amendments include the cancellation of original Claim 33 and the introduction of newly submitted Claims 34 and 35.

The Examiner will note that Applicant's have also drafted additional Claims 36- 45 wherein Claim 36 is a new main independent claim. In these new claims, it will be noted that the flocculating organic component must be "cationic." Support for this newly introduced limitation in the language of the claim can be found, for example, beginning at page 9, line 27, (Example 2) and also from page 12, lines 5 and 6 (Example 3) of the description.

In the present Office Action, the Examiner has substantively rejected Applicant's Claims 25-33 under 35 U.S.C. §103(a) as being unpatentable over Allan (4,028,238) in view of JP 59046198 to A Hata. The U.S. Patent No. 4,028,238 concerns a process for dewatering a sludge. This process comprises the following successive steps:

- a) adding to the sludge firstly a sufficient quantity of CaO or Ca(OH)_2 for making the sludge alkaline ($\text{pH}=11.5-12$) and thereafter alum for obtaining a mineral coagulation at pH value from about 10 to about 11,
- b) adding to said mixture a flocculating agent for further agglomerating the coagulated sludge, with obtention of a flocculated sludge containing aluminum hydroxide;

- c) adding to the flocculated sludge 25 to 75% by weight of CaO or Ca(OH)₂ based on the weight of suspended solids in the sludge before treatment; and
- d) filtering.

There are consequently two additions of lime, before and after the flocculation, and an addition of alum in the process. In all the examples, the sludge has a pH of 6.3. The pH is firstly adjusted to 11.5-12.0 by means of an addition of lime. Only thereafter alum is introduced in the alkalized sludge (see for example Col. 2, line 20 or Col. 3, lines 41-46) in order to form a gelatinous precipitate (coagulation) and, as a consequence of this addition, the pH is lowered to a value of 10-11. Thereafter the flocculant is added, because the coagulated sludge shows too small of a speed of filtration (see Example 2 and Col. 4, lines 4-8), and finally the second addition of lime takes place with obviously again a rise of the pH.

This teaching is completely in contradiction with the core concepts of the present invention. As it results from page 2 of the present patent Specification, the use of lime in order to assist the flocculation of a sludge by an organic flocculating agent is to be avoided because the result is a too rapid degradation of the usual flocculants at a very high pH (see page 2, lines 31-35). In the US patent to Allan, lime assists a mineral coagulation of the sludge by alum and consequently does not experience the problem of a rapid pH increase when the lime is added. According to the present invention, it is also not favorable to introduce foreign additives into the sludge (see page 3, lines 29-30). Alum is a foreign additive which will introduce aluminum compounds in the sludge cake to deposit after filtration.

The present invention consists in the selection of a very particular basic agent which is able to assist the flocculation without degrading the usual flocculant compounds.

The Japanese patent JP 59046198 discloses a heat-generating dewatering agent for sludges. In this reference, there is no flocculation and thus no flocculating agent. Only one dewatering agent is

added, not as an aid to a flocculating agent. The dewatering agent can be CaO (= lime) dolomite, CaCO₃, shell fossil, Na₂CO₃, Ca silicate or mixtures thereof.

On the other hand, it will be seen from the teaching of the present invention (see above), that the use of lime is to be avoided. Moreover, as can be seen from Example 2 of the Japanese reference, in the filtration step, (page 10, line 3 to page 11, line 33), CaCO₃ (= limestone) was added in place of the basic agent according to the teachings of Applicant's invention. However, as it results from this example CaCO₃ has no effect on the gain in dryness of the dewatered sludges, as is the aim of Applicant's invention.

As can thus be seen from this comparative examination of the Japanese document, a skilled person having knowledge of the US patent 4,028,238 would certainly be prompted to adapt the method according to the Japanese reference by replacing lime with another dewatering agent disclosed in the Japanese document, particularly if this agent does not have as its purpose, a first high alkalization of the sludge to pH values of 11.5-12.0. Moreover, nothing is to be found in the Japanese document that would explain to the skilled person which dewatering agent he must select if he intends to obtain simultaneously no excessive increase of the pH, and a gain in dryness of the obtained sludge (see in this regard, the aim of the present invention, page 4, lines 9-16).

Note that Applicant has further emphasized this position in the claim amendments in that Claims 36-45 all specify that the flocculant compound is cationic. These substances become inactive at elevated pH, for example at a pH of more than 10 (see Attachment A, enclosed with this Response).

In the US patent to Allan cited by the Examiner, the flocculant agent is not particularly specified in the detailed description portion of the Specification, (see Col. 2, lines 31-35). However, in the Examples, an anionic flocculating agent is used (see Col. 4, lines 9-13). The anionic flocculating agents become active only at very high pH.

As a consequence, the process according to the teachings of the cited US patent to Allan is not applicable for a cationic flocculant agent.

Based upon the above arguments and amendments, Claims 25-32 and 34-45 are though to be allowable over the art of record, and an early notification of the same would be appreciated.

Respectfully submitted,

Date: April 21, 2009



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